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**COMBAT SERVICE SUPPORT REACH: A RISKY SUPPORT
STRATEGY FOR THE INTERIM BRIGADE COMBAT TEAM**

BY

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USAWC STRATEGY RESEARCH PROJECT

**COMBAT SERVICE SUPPORT REACH: A RISKY SUPPORT STRATEGY FOR THE INTERIM BRIGADE
COMBAT TEAM (IBCT)**

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ABSTRACT

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On 12 October 1999, the Chief of Staff Army, Gen. Eric K. Shinseki, announced the Army's need to be strategically responsive and dominant across the full spectrum of operations. At the center of his vision is the Army's transformation. Also during his speech, General Shinseki announced that "we will begin immediately" to develop technology-enhanced, fast-deployable and lethal brigades called Interim Brigade Combat Teams or IBCTs. He said they will be dominate across the full spectrum of military operations and have the capability to deploy anywhere in the world within 96 hours. To achieve this objective General Shinseki pointed to one enabling capability – "CSS Reach". CSS Reach is the answer to the concept of full spectrum dominance envisioned by Joint Vision 2010/2020 and its assertion that dominance is only achievable if we minimize the footprint forward. General Shinseki, articulating this idea, posited, that to make up for the smaller footprint, "you have 'reach back' capabilities, so when you need something you reach back for it". There's the rub, CSS Reach seeks to exploit the integration of "commercial sector best practices". These attempts at combining industry to government strategies, bring a unique set of risks and vulnerabilities into play. We find that the very techniques, partnerships, and processes sought to be capitalized upon turnout to be harbingers of risk. Consequently, CSS Reach, unintentionally, becomes a liability to the very endstate it promises to deliver. At risk is full spectrum dominance and warfighter confidence in a logistics strategy that reduces security, in the way of inventory and logistics capability, forward. The vulnerabilities are not irreversible. Investment in some key areas will go a long way towards mitigating the risks, and paving the way for the development of better logistics support strategies for the objective force. The purpose of the paper is not to dismiss CSS Reach as a strategy, but to highlight its promise and vulnerabilities. Through wise investment CSS Reach can achieve its goal and maintain warfighter confidence and logistics credibility.

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COMBAT SERVICE SUPPORT REACH: A RISKY SUPPORT STRATEGY FOR THE INTERIM BRIGADE COMBAT TEAM

On 12 October of 1999, the Chief of Staff of the Army (CSA), General Eric K. Shinseki, concerned with the Army's relevance in the 21st Century, directly assaulted the problem when he made the following announcement at the 45th Annual Meeting of the Association of the United States Army (AUSA):

Change will require a comprehensive transformation of the Army. To this end, we will begin immediately to turn the entire Army into a full spectrum force which is strategically responsive and dominant at every point on the spectrum of operations. We will jump start this process by investing in today's 'off-the-shelf' equipment to stimulate the development of doctrine, organizational design, and leader training even as we begin a search for the new technologies that will deliver the material needed for the objective force. As quickly as we can, we will acquire vehicle prototypes, in order to stand up the first units Interim Brigade Combat Teams (IBCT)] at Fort Lewis, Washington, where the infrastructure, maneuver space, and gunnery ranges will accommodate such a transformation.¹

This sudden announcement caused Army strategists quickly to begin developing concepts and strategies to make his idea a reality. With their marching orders in the form of the CSA's Vision Statement, titled "The Army Vision: Soldiers on Point for the Nation, Persuasive in Peace, Invincible in War"; they began work to develop capability that would put the IBCT anywhere in the world in 96 hours, a division on the ground in 120 hours, and five divisions to the same location in 30 days. Additionally, they were told to consider the following enabling logistics themes as they moved towards their solutions: revolutionary approaches to transportation, scaling the logistics footprint, reducing supply demand, and leveraging "reach back" capability.²

During this same speech by General Shinseki, Reach Back was announced as the enabling capability for transformation.³

We will enable our divisions to dominate across the full spectrum of operations by providing them the agility and the versatility to transition rapidly from one point on that spectrum to another with least loss of momentum. To do so, we must develop a vibrant capability for "reach back" . . . so that we can begin to aggressively reduce the size of our deployed support footprints, both combat support and combat service support.⁴

This study will examine the strategy of Reach Back from its inception in the Army's vision, through its emergence as a strategy supporting Army Transformation. It will look at the critical components of Combat Service Support (CSS) Reach and their relationship to industry's "Commercial Best Practices". Finally, the study will critically analyze these areas to determine the vulnerabilities associated with CSS Reach and their implications for the Objective Force;

more specifically, it will critically assess the vulnerabilities of reach in the context of providing Class IX (repair parts) support. The Interim Brigade Combat Team (IBCT) concept, Army Transformation's Interim Force, will serve as the object of focus to highlight the integration and components of 21st Century logistics concepts and requirements. Certainly, CSS Reach is not without its advocates or critics; it has not been proven to be the "silver bullet" for transformation sustainment. This paper will prove that the over-reliance on information technology (IT) and commercial sector "Best Practices" isn't always a good thing; if left unchecked, they can introduce unwanted vulnerabilities to the logistics system and put mission accomplishment and ultimately, the achievement of Army transformation objectives at risk.

To understand the promise of CSS Reach, one must understand its roots which extend from the operational logistics concepts validated in Joint Vision 2010, and the Revolution in Military Logistics (RML).⁵ At the Joint Level, logistics change towards enabling full spectrum dominance started with JV 2010 and Focused Logistics; at the Army level, the change started with a Revolution in Military Logistics.⁶

FULL SPECTRUM SUPPORT — ENABLING THE FULL SPECTRUM FORCE

In strategy development circles such as U.S. Army Training and Doctrine Command (TRADOC) and Headquarters, Department of the Army (HQDA), General Shinseki's Vision, outlining the characteristics of the transformation force, has resurfaced the ongoing debate over the role of logistics as an enabler towards full spectrum dominance. Among those involved, the debate maintains the idea that in order for the United States Army to attain dominant status in the full spectrum of operations, a corresponding world class logistics system must be developed: one that can keep strategic, operational, and tactical level pace with the warfighter, beat-for-beat.

The Joint Staff publications, Joint Vision 2010 (JV2010), 1996, and Joint Vision 2020 (JV2020), 2000, in their respective, Focused Logistics paragraphs, address the issue this way:

- JV2010. These new operational [logistics] concepts will reinforce the others and will allow us to achieve massed effects in warfare from more dispersed forces. . . . Taken together these four new concepts will enable us to dominate the full range of military operations from humanitarian assistance, through peace operations, up to and into the highest intensity conflict. . . . Focused logistics will ensure delivery of the precise amount and types of supplies required for our joint forces to succeed in combat or non-combat operations.⁷
- JV2020. If our Armed Forces are to be faster, more lethal, and more precise in 2020 than they are today, we must continue to invest in and develop new military capabilities. . . . As first explained in JV 2010, and

dependent upon realizing the potential of the information revolution, today's capabilities for maneuver, strike, logistics, and protection will become dominant maneuver, precision engagement, focused logistics, and full dimensional protection.⁸

Former Chief of Staff of the Army, General Dennis J. Reimer, in addressing the "body at large", articulated a response to this issue this way:

As I have said many times, there can be no revolution in military affairs (RMA) without first having a revolution in military logistics (RML). To provide the capabilities-based forces we need for the future, we must set the stage for transformation by changing the way we project and sustain those forces. . . . These initiatives are crucial for readiness and modernization today. It is ... about rethinking logistics functions and processes that will enable decisive victories well into the future. . . . It includes integrating logistics functions, replacing volume with velocity, reducing demand, and lightening the logistics load on the ultimate customer—the warfighter. . . . We have a clear vision of 21st century global military logistics and paths to achieve it. All of our efforts are focused by the six tenets of RML. . . . Achieving this vision. . . . Includes Department of Defense initiatives and ... demands strong and long-term partnerships with industry to develop and exploit the best ideas and practices.⁹

The Six tenets of RML, which serve to frame how the Army will do business in the 21st Century, are:

- A seamless logistics system.
- Distribution based logistics.
- Total asset visibility.
- Agile infrastructure.
- Rapid force projection.
- Maintaining an adequate footprint.

So it follows, that the Army's transformation to become a full spectrum force would come upon the heels of the validation of its RML tenets which embody the Joint Vision themes. That validation was achieved between April 1997 and January 1998.¹⁰

ARMY TRANSFORMATION

In October of 1999 General Shinseki raised the bar in the revolution in military affairs by announcing the Army's Transformation and the creation of the Interim Brigade Combat Teams (IBCT) to begin turning the Army into a dominant full spectrum force.¹¹

To sustain this force, a logistics strategy which embraced the concepts of JV2010 Focused Logistics and RML would have to be developed. To this end, the Army published its Transformation Campaign Plan (TCP).¹²

The TCP is the Army's common framework for guiding Transformation.¹³ As such, it is a mechanism for integrating and synchronizing all elements of the Army Vision. In the TCP, responsibility is assigned to the principals on the Army Staff, to oversee the development and synchronization of the major transformation objectives. A review of the TCP reveals that the Army G4 (ODCSLOG) exercises oversight over Line of Operation 9 (LO9), "Deploying and Sustaining". The major objectives of LO9 are to--

- ensure Army forces are capable of rapidly deploying in support of current and future operational force deployment goals;
- effectively sustain the full spectrum of operations while synchronizing Army and Joint efforts to reduce the Operational Force sustainment requirement and related CS/CSS demand on lift;
- reduce the deployed CS/CSS footprint in the combat zone;
- transform the Institutional support elements of the Army to be more strategically responsive (across the full spectrum);
- and reduce the cost for logistics/support without reducing warfighting capability.¹⁴

The emerging logistics strategy which best achieves the goals of LO9 is Combat Service Support (CSS) Reach.¹⁵

COMBAT SERVICE SUPPORT (CSS) REACH

CSS Reach is the doctrinal solution towards exploiting the logistics concepts of RML, JV 2010 and Joint Vision 2020 Focused Logistics (the updated version of JV2010).¹⁶ As a joint publication, Joint Vision 2020 had the same influential effect on the development of logistics concepts and strategies as did its predecessor. It was pertinent to the emerging environment and current in its view of logistics possibilities. Its tenets closely resemble those of LO9 and are aligned with CSS Reach Doctrine.¹⁷ Essentially, focused logistics will--

- be the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while enroute, and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations;
- be fully adaptive to the needs of our increasingly dispersed and mobile forces, providing support in hours or days versus weeks;
- enable joint forces of the future to be more mobile, versatile, and projectable from anywhere in the world;

- incorporate information technologies to transition from the rigid vertical organizations of the past;
- utilize tailored combat service support packages;
- work jointly and integrate with the Service, Defense agencies and civilian sector, where required, to take advantage of advanced business practices, commercial economies, and global networks.

When this list of themes is scoped down to the important functions they embody, one can see three areas emerge:

- leveraging information technology;
- integrating and synchronizing business practices with Department of Defense (DoD), and industry;
- leveraging fast reliable transportation.

CSS REACH DEFINITIONS AND COMPONENTS

At the outset of the Army's endeavor to transform, the use of the term "reach", in a logistics context, was relatively new. Since then, a number of draft documents circulating attempt to come to grips with its meaning. This emphasizes that reach doctrine is still emerging. Field Manual 3-0, Operations, June 2001 provides one of only a few official definitions published to date:

Combat service support reach operations involve the operational positioning and efficient use of all available CSS assets and capabilities, from the industrial base to the soldier in the field. They enable force commanders to extend operational reach and to deploy and employ the force simultaneously, without pause. CSS Reach operations merge operational art and science into an operations enabler. They minimize the CSS footprint in theater by deploying the minimum essential CSS elements to the area of operations (AO) and establishing links to and fully exploiting all available sources of support. CSS Reach operations include the use of intermediate staging bases (ISBs), forward-deployed bases, Army pre-positioned stocks, and Continental U.S. (CONUS) resources. CSS Reach operations capitalize on split-based and modular operations; they take maximum advantage of all available sources of support for follow-on sustainment¹⁸

A more relevant definition, though it has not yet been approved by U.S. Army Training and Doctrine Command (TRADOC), is found in Field Manual (FM) 4-0/100-10, Combat Service Support, Final Draft, dated 22 August 2001:

CSS Reach operations refer to deploying the minimum essential Army CSS elements to the area of operations and establishing links to and fully exploiting all available sources of support. CSS Reach operations include utilizing normal support relationships as well as reaching in all directions to acquire available

support from contractors, the host nation, other services, multinational partners, and non governmental organizations in the area of operation.¹⁹

The Interim Brigade Combat Team Operational & Organizational Manual states that "Reach Back":

Encompasses the capability of the IBCT to exploit a multitude of non-organic resources to accomplish its assigned missions. The IBCT executes reach-back on a routine, deliberate basis as a combat power and sustainment multiplier, in five primary areas: fires/effects; intelligence and information; planning and analysis; force protection; and sustainment. Reach-back permits the IBCT to reduce its footprint in the area of operations without compromising its ability to accomplish its assigned mission. Reach-back also enhances the operational agility of the IBCT and reduces its force protection requirements. Reach-back is executed primarily through the division, although the ARFOR will authorize direct linkages between the IBCT and resource providers when it is prudent and efficient to do so.²⁰

The use of the terms "Reach", "Reach-back", "Reach Operations" and CSS Reach have been used interchangeably for the conduct of "reach" activity. For the purposes of this paper it is important to note that the term is being shifted more and more to becoming "Reach" in the IBCT doctrinal manuals, thereby making it more of an umbrella term.²¹ The use of CSS with Reach denotes its use in a logistics context.

CSS Reach, when examined closely, isn't a new concept; it is the employment or synthesis of a myriad of emerging logistics initiatives into one concept or strategy. The following initiatives comprise the strategies of reach and therefore become its components:

- Split Based Operations.
- Velocity Management.
- Information Superiority.
- Strategic Distribution Management.

In short, information technology (IT), multiple and diverse supply sources, and fast reliable transportation are the critical components of CSS Reach.

The synergy created by the exploitation of these components, owe their realization to the exploration of "commercial sector logistics best practices", such as just-in-time (JIT), inventory management, and commercial support/outsourcing.²²

COMMERCIAL SECTOR LOGISTICS – THE BEST PRACTICES

Commercial sector logistics strategies such as "supply chain management" have long been the source of ideas for Army logistics concepts. The Army embraced these practices after the cold war, when it realized its metrics were no longer applicable.²³ The resulting efficiencies

and concepts would be the basis for how the Army approached its logistics strategies to support the emerging Force XXI and the Army After Next (AAN) organizations. The Army's capstone strategy which incorporates these efforts is called the Revolution in Military Logistics (Army Strategic Logistics Campaign Plan). This existing partnership with industry is aptly presented by Mr. Larry Smith, Chief of the Concepts Development Division, Army Logistics Integration Agency, in his paper, "Commercial Logistics Best Practices for the Revolution in Military Logistics". He states:

Methodologies and applications used in private industry that set a commercial enterprise above the competition are referred to as "commercial best practices." Best practices enable leading-edge organizations to deliver world-class standards of performance to their customers. These best practices and standards of performance have generated a lot of interest within the Army logistics community, where we constantly are being asked to do more with less. The emergence of commercial best practices took place because of downsizing and a hunger for profitability, or doing more with less, so it stands to reason that there could be a great deal of benefit to Army implementation of these best practices. The leveraging of commercial best business practices appears frequently in the literature and during presentations concerning the Army of the future, the RML, and the Army After Next (AAN).²⁴

The definitions of these strategies offer insight into their appeal and promise to strategies such as reach. After years of examination and real world application, one can understand the wide acceptance of these select strategies.

- Definition of Just-in-Time:

One government agency defines just-in-time this way:

"JIT is not a technique. It's a management philosophy, now adopted . . . to bring certainty and smoothness to the flow of materials through the supply chain, and to eliminate wasteful practices such as holding safety stocks What you are trying to develop with a JIT approach is a network of quality-assured supply partners who can deliver the right quantity to the right place at the right time, every time. The delivery point may be to a retail outlet or it may be to a production line. Your supplies are delivered against an agreed schedule with absolute certainty on the day they are required, rendering expensive safety stocks redundant."²⁵

- Definition of Inventory Management:

The book Logistics Principles and Applications offer this description of inventory management:

Inventory exists to provide the most cost-beneficial material support of its dependent activities. Such activities may take the form of production or wholesale-level support requirements, support of intermediate-level distribution points, operational support of organizational or retail-level activities, or any combination of these three user levels. All inventory managers aspire to fulfill all requests for their stock in a timely manner. Notwithstanding this noble goal, each inventory manager must work within capricious parameters determined by users'

needs priorities, order and delivery intervals, and financial constraints. The idyllic scenario of 100 percent responsiveness is impossible in practice. The realistic alternative for the inventory manager is to assign priorities, establish support stockage levels based on plausible probabilities of fulfillment, and establish the most cost-effective inventory support system consistent with these considerations.²⁶

- Commercial Support/Outsourcing:

Commercial support has a wide range of entry points for vendors to provide logistics services and support to the Army. When an organic capability does not exist to provide an item of supply or service, commercial support augments or fills that shortfall. Recent experience reveals that almost any type of support can be obtained to fill the full spectrum of needs.

Some widely used terms given to the formal agreement between the military and the commercial sector for a vendor to provide logistics support to the Army are Contractor Logistics Support, and Third-Party Logistics Source. Essentially they involve the following concepts:

- In Contractor Logistics Support (CLS), the contractor provides all maintenance, material management, and associated system support. CLS should be approached as a partnering arrangement between commercial entities and program management and supply support communities, since maintenance, repair, and supply support functions are involved.²⁷
- In Third-party Logistics Source (3PLs), a private firm provides logistics services under a contract to a primary manufacturer, vendor, or user of a product or service. It is called third-party because the logistics provider does not own the product but participates in the supply chain at points between the manufacturer and the user of a given product. Contract support, host nation support, and outsourcing can be categorized as third-party logistics capability.²⁸

The arrival by logistics strategists at these specific areas of focus was no accident. In October 1996, then Under Secretary of Defense for Acquisition and Technology, Paul G. Kaminski offered the following remarks at the DoD Logistics Offsite Conference, in Leesburg, Virginia:

If logistics is to become a force multiplier in the 21st century battlespace. My sense is that the logical outcome of a seamless warfighter —logistician partnership — will lead to three guiding principles for battlespace logistics. They are: reduce the logistics response time; reduce the logistics footprint; and, reduce the logistics infrastructure.²⁹

This collection of principles and best commercial logistics practices can be called "Supply Chain Management".³⁰

How does CSS Reach leverage these initiatives founded in the commercial sector to support the Interim Brigade Combat Team? The answer to this question can be traced to the emerging doctrine governing operations and support of the IBCT.³¹

CSS REACH IN THE INTERIM BRIGADE COMBAT TEAM (IBCT)

CSS Reach is the doctrinal attempts to satisfy the stated goals of Army transformation outlined in Line of Operation 9. Reach, as announced by General Shinseki, is the enabling support strategy for Army transformation. In that light, the Interim Brigade Combat teams will rely on "reach" strategies for operational and tactical sustainment.³²

To explain the logistics concept of support, it is first necessary to give an overview of the employment concept for the IBCT. This summary, from doctrinal work-in-progress, relates the brigade's full spectrum characteristics:

The IBCT is a full spectrum combat force. It has utility in all operational environments against all projected future threats, but it is designed and optimized primarily for employment in SSC operations in complex and urban terrain, confronting low-end and mid-range threats that may employ both conventional and asymmetric capabilities. The IBCT deploys very rapidly, executes early entry, and conducts effective combat operations immediately on arrival to prevent, contain, stabilize, or resolve a conflict through shaping and decisive operations. The IBCT participates in major theater wars (MTWs), with augmentation as a subordinate maneuver component within a division or corps, in a variety of possible roles. The IBCT also participates with appropriate augmentation in stability operations and support operations as an interim entry force and/or as a guarantor to provide security for stability forces by means of its extensive combat capabilities.³³

The logistics concept to support the IBCT employs the tenets of focused logistics and conforms to the intent of LO 9 to reduce the logistics footprint forward while maintaining responsive, effective logistics support. Accordingly, CSS Reach relies heavily on the strategies founded in the commercial sector. Major components of the logistics concept articulated in the draft manual are: CSS Reach, tailored/streamlined force packaging, optimization of resources, split-basing, modularity, just-in-time support, contract support, host nation support, and outsourcing.³⁴

Interim Brigade Support Concept

To operate in the full spectrum environment the army is transforming some of its brigades into Interim Brigade Combat Teams.³⁵ These brigades are organized much differently than their predecessors. As one would expect, with the parallel transformation of the military occurring in almost every functional area, the IBCT's logistics architecture has been designed to take full

advantage of the benefits of DoD's logistics transformation. The incorporation of the most promising attributes of the "Integrated Supply Chain"/"Extended Enterprise" is what allows this force to be responsive to the Army's need.³⁶ So what are the enterprising themes driving CSS Reach?³⁷

- Velocity management oriented.
- Distribution based.
- Information/network centric.
- Maximum use of throughput.
- Maximum use of configured loads.
- Time Definite Delivery.

To understand the roles these themes play in CSS Reach, the supply function of Class IX was selected to be examined. The Department of Defense's strategic name for this function is product support.³⁸

Class IX Support in the Interim Brigade Combat Team

The planned class IX concept of support for the Initial Brigade Combat Teams provides the platform for the critical analysis of reach as a viable support concept. This analysis may have implications on the other classes of supply as well as implications on the development of logistics support for future initiatives such as the Objective Force and the Future Combat System (FCS).

Class IX is defined as repair parts and includes major assemblies such as engines and transmissions, tires, batteries, and circuit cards or Line Replaceable Units (LRUs). The IBCT will have an authorized stockage list (ASL) in its direct support unit; and it will also be authorized to develop shop, bench, and prescribed load lists (PLL) stocks. Its total capability will equate to 72 hours of self sustaining supply.³⁹ \$ IBCT O & O Fly away Class IX packages prepared in strategic configured loads (SCLs) maintained at echelons above brigade, and links to other DoD and non DoD supply sources will provide the follow-on sustainment after the brigade's closure in theater.

The success of DoD product support is at the heart of Army initiatives to tap into commercial and industry Class IX capabilities. To understand its usefulness in support of the IBCT following overview is provided:

- Definition of Product Support:

A package of support functions intended to maintain the readiness and operational capability of weapon systems or subsystems over their life cycle.

The source of the support maybe commercial or organic, but its primary focus will be to optimize customer support to achieve maximum weapon system availability.⁴⁰

The obvious standout in this definition is the mention of "over their life cycle". Under CSS Reach, this thought may not be so far out of place. Product Support/Class IX operations under CSS Reach seek to exploit strategies such as Prime Vendor (PV), Virtual Prime Vendor VPV), and the Maintenance Repair Operations Program (MRO).⁴¹ The following description, paraphrased from the Department of Defense study on product support in the 21st century, explains these programs and reveals their benefits to CSS Reach operations:

Prime Vendor (PV), Virtual Prime Vendor (VPV), and the Maintenance, Repair, and Operations (MRO) Program are industry to Government business arrangements along a continuum that ranges from simple supply support functions to integrated logistics chain management functions. PV, VPV, and MRO partnerships allow DoD to take advantage of leading-edge logistics expertise and capacity in industry and focus the mission support expertise of DoD personnel on DoD requirements. The use of these arrangements can be expanded with other commercial contractual vehicles, such as corporate contracts, long-term contracts, direct vendor delivery, on demand manufacturing, and related vendor-managed inventory relationships as appropriate.⁴²

Focused definitions of each of the initiatives above reveal where they would fit in the product support/Class IX process:

- A PV arrangement is a partnership with a vendor for commercial products and uses commercial pricing and established distribution arrangements.
- A VPV for consumables or reparable is a partnership with an integrated logistics chain manager to support a customer or at least one commodity or product line.
- The MPO program provides DoD activities with commercial supplies and items identified with national stock numbers that support public works and base maintenance missions. The MRO program capitalizes on industry-integrated supply chain management and electronic catalogs.

Also, CSS enablers such as total asset visibility, dedicated communications and transportation are essential to requisitioning, tracking and receipt of Class IX. These three enablers are the backbone of the IBCT repair parts system; their fragility and vulnerability to interruption make them an Achilles heel to reach operations. This weakness in the system introduces risk into support operations. Reach is a strategy designed with risk connected to it.

"CSS Reach operations are key to early support of the IBCT. They involve a risk analysis and ultimate decision by the commander as to what support capabilities must be on hand in the AO and what can be deferred until positioned capabilities can become available to provide support."⁴³

Not more than ten years ago, critics of reach could argue, this concept would find no acceptance among Cold War logisticians. The combat service support guide carried by most combat logisticians, published in 1993 expresses the essence of that era's logistics ethos:

Logisticians must function in a push system mode. They are negligent if they wait for and fill all requests for support submitted by the tacticians at the front. This method would be a pull system. . . . The only result of such bureaucratic inaction is dead soldiers, who received too little too late.⁴⁴

Reach is a pull supply system built upon peacetime incentives with vulnerabilities integral to it and if left unaddressed will have unintended consequences. What did we do before reach?

What Did We Do Before the Smaller Footprint Mandate?

The consideration of reach as a strategy for the future shows how American manufacturers and logisticians have heartily embraced the notion that parts and supplies should arrive in small manageable quantities and only as needed ("Just-in-time") to reduce inventory stockpiles, or, in the Army's case, the logistics footprint. Before reach, the Army supply system, coined "just-in-case" (JIC) supply, was used. It mitigated risk by employing algorithms to identify necessary supply stocks, with safety levels included, that would possibly be consumed in the accomplishment of the mission. These stocks were ordered and deployed to the theater for the expected duration of the mission.

Just-in-case, the antithesis of "just in time", does have its issues; it tends not to contribute to the reduction of the CSS footprint forward and it does consume lift assets to keep it fed –it essentially works on automatic pilot (uses computer reorder points and near to zero balance replenishments). What JIC did that was indispensable to warfighting was bring closer the possibility of assured supply availability. That is the warfighter's real concern.⁴⁵

The potential vulnerabilities of Reach became obvious on Sep 11 when suddenly, freight traffic was thrown into chaos, with aircraft grounded and trucks caught in miles-long backups, particularly at border crossings. Corporate America is in the process of reassessing its inventory management; and now, a trend is developing that posits that justin-time efficiency may yield to just-in-case security.⁴⁶ One thing is clear: Sept. 11 is a big wake-up call for supply-chain managers and logisticians to re-examine their systems for weaknesses.

As Army logistics evolves into an anticipatory, all encompassing, distribution-based system, we must assess the full implications of using unproven technology and non Department of Defense logistics sources such as host nations, contractors, and third-party logistics companies. By revealing the risks and vulnerabilities brought on by these initiatives as well as

other associated with reach we will be able to invest in actions to mitigate the risk, preventing vulnerabilities from materializing. So what are the vulnerabilities of Reach?

VULNERABILITIES OF CSS REACH

For want of a nail, the shoe was lost. For want of a shoe, the horse was lost.
For want of a horse, a rider was lost. For want of a rider, the battle was lost.

—Benjamin Franklin⁴⁷

Paradoxically, the vulnerabilities of CSS Reach exist precisely because of its own lofty goals. Designed to perform within the commercial sector's "Extended Enterprise" (the graduate level to supply chain management); CSS Reach promises to integrate its core and extended suppliers, increase supply velocity, offer near real-time information and asset visibility, and reduce the logistics footprint.⁴⁸ Accordingly, CSS Reach has emerged as the logistics strategy of choice for the IBCT. But the nature of its employment: its operational environment; and the tight interlinkages of its components threaten to expose it to new vulnerabilities and place mission success at risk.

" . . . advances in information technology and competitive pressure to improve efficiency and productivity have created new vulnerabilities to . . . information attacks as these infrastructures have become increasingly automated and interlinked. If we do not implement adequate protective measures, attacks on our critical infrastructures and information systems by nations, groups, or individuals might be capable of significantly harming our military power and economy."

National Security Strategy, October 1998⁴⁹

What then, one must ask, is at risk in the wake of this vulnerable sustainment environment? The answer beyond the obvious, which we discuss, I believe will be the creditability, and confidence of the logisticians and warfighters respectively. These two sources of strength are the intangibles; the center of gravity, if you will, of ultimate success. If CSS Reach is to enable the force's full spectrum capability, these imperatives must be maintained⁵⁰ Speaking on the importance of real-time asset visibility in maintaining the warfighter's confidence, then, Under Secretary of Defense for Acquisition and Technology, Paul G. Kaminski remarked:

The alternative to a robust asset visibility capability is the ongoing requirement to procure, receive, stow, maintain, issue and dispose of mountains of "just-in-case" inventory and other resources. In the absence of rock-solid information regarding the availability of materiel, the warfighter will always buy readiness insurance in the form of excess local stocks.⁵¹

In the logistics community, the five characteristics of logistics guide our strategy to that end: anticipation, integration, responsiveness, continuity of support, and improvisation.⁵² The many vulnerabilities of CSS Reach impact directly upon these factors threatening its success. The loss of warfighter confidence is a risk we should not take lightly.

THE CONTRIBUTORS TO RISK IN CSS REACH

It is known that CSS Reach can place military operations, equipment readiness and people at risk.⁵³ So why is it the strategy of choice for the IBCT? In order to understand why one has only to recall the goals of JV2020 stated above; in doing so, the conclusion one is left with, is that, the risk is outweighed by the greater gains – smaller CSS footprint and full spectrum dominance.⁵⁴

Full spectrum dominance in the IBCT is predicated upon its freedom of action unencumbered by its logistics tail or footprint.⁵⁵ The following passage taken from Field Manual (FM) 4-93.7 (63-7), Combat Service Support to the Interim Brigade Combat Team (IBCT), Coordinating Draft, dated 30 August 2001, captures fully this idea:

“The IBCT has the capability of being deployed anywhere in the world in 96 hours from ‘first aircraft wheels up.’ It is specifically designed as an early entrant in contingencies, including military operations other than war (MOOTW) and MTWs, including those involving the potential use of weapons of mass destruction and humanitarian relief. To achieve rapid deployability, the IBCT’s design capitalizes on the widespread use of common vehicular platforms . . . coupled with the minimization of personnel and logistics footprint in theater.”⁵⁶

A smaller CSS footprint eliminates the large inventories and safety stocks relied on in the past and trades them for: speed and accuracy in requisitioning and asset visibility; rapid, dependable delivery systems; and access to a wide range of supply sources.⁵⁷ Achieving a reduced logistics footprint brings unintended 2nd and 3rd order consequences.

To achieve the smaller footprint and enable the IBCT to enjoy full spectrum dominance, CSS Reach brings together a collection of: commercial practices; DoD logistics transformation initiatives; and Army’s velocity management program initiatives.⁵⁸ Consequently, it is these untried concepts that are cause for concern and serve to threaten logistics mission accomplishment. This collection of logistics practices help make up the overall operating environment for the IBCT; their employment within it can create an undesired synergy producing risk and vulnerability.

Another risk contributing factor to CSS Reach is the deliberate attack. These attacks can take many forms and tremendously add to the difficulty of mission accomplishment. These attacks can be leveraged upon every component of CSS Reach and are therefore considered a

major threat to logistics responsiveness and continuity of support.⁵⁹ Kathryn Dobie, in a sidebar article titled Just-in-Time to Just-in-Case, captures the essence of this argument:

Ford Motor closed five North American plants when engines and drivetrains failed to arrive from Canada. Electronics manufacturer Solectron chartered a plane to transport components to Ireland from California. And General Motors delayed production of 10,000 cars and trucks when the company couldn't get parts. Because of the uncertainty created by terrorist threats, some experts expect to see a shift away from the tightly choreographed world of just-in-time logistics, where factories, suppliers, and purchasers use information technology to reduce inventory overhead. "We'll see more inventory padding throughout the supply chain," predicts Jennifer Chew, an analyst at Forrester Research in Cambridge, Mass. Just-in-time is undergoing a reexamination, giving way to systems that can accommodate greater flexibility and redundancy.⁶⁰

Thus, three factors shape the risk inherent in the IBCT: its operating environment; asymmetric threats; and the reduced CSS footprint.

The Operating Environment

The operating future for the IBCT will be characterized by the requirement to respond to the full spectrum of operations, at home and abroad, over long lines of communication and utilizing a logistics infrastructure that is becoming more and more commercialized (outsourcing/third party logistics - 3PL, host nation support).⁶¹ The roles it can expect to have include disaster relief, peacekeeping, humanitarian assistance, counterterrorism, security assistance, sanctions enforcement, show of force, and counter-drug operations and mid to high intensity combat.⁶² These missions will likely continue well into the century and be opposed by an enemy seeking to use asymmetric efforts to level the playing field.

Lengthy lines of communication and commercialization of the distribution process will characterize future deployments. Our most recent operational deployments have shown that support and sustainment of U.S. and coalition military operations will be provided from a wide variety of sources at a broad range of geographic locations (including the continental United States) by an increasingly diverse group of agents. This diversity of support locations and agents will increase, as military logistics planners strive to adopt the efficiencies of commercial logistics practices and to make greater use of commercial transportation resources and contract services to ultimately reduce the CSS footprint.⁶³ The following characterization of the U.S. military experience in Bosnia captures the idea of commercial support integration succinctly:

"In Bosnia, DoD found itself in close proximity to the fully modern European economy, yet far enough away to put significant demands on both military and commercial providers. Although the initial support planning involved large amounts of military direct support, DoD components quickly began to explore the

potential of using commercial services. Ultimately these played a significant role, making clear that commercial support of some types (and I emphasize this point) is not limited to behind the lines.⁶⁴

Using this example, a deployed IBCT would find itself operating in close proximity to a benign environment where day-to-day commerce continued, little affected by nearby fighting. Speaking on the subject of the conduciveness of secure commercial capability in and around the potential "hot spot", General Henry T. Glisson, then director of DLA stated: 'where a robust commercial capability exists, we can bring it [the product] to the customer quickly'⁶⁵ Accordingly, the IBCT's proximity to potentially secure commercial facilities (APODs/SPODs urban areas etc.) would lure it into greater use of commercial resources for the strategic and operational legs of its sustainment, thus creating a potentially false sense of increased capability, brought on by the increased vulnerability to commercial sector capabilities and their disruption by adversaries.

The Asymmetric Threat

Though a full spectrum combat force, IBCT engagement contingencies will generally occur toward the lower end of the conflict spectrum, in less-developed nations.⁶⁶ As a consequence, it will frequently be required to operate in challenging 'asymmetric environments' (urban centers, or remote, austere, or otherwise underdeveloped areas with limited infrastructures, and inadequate health and sanitation facilities, etc.). These environments will present unique deployment, operational, intelligence, and logistical problems that may limit many of its 'information technology' force advantages.⁶⁷ Similarly, such contingencies will, more often than not, pit the brigade against adversaries who are likely to employ a variety of asymmetric approaches to offset US advantages and exploit perceived weaknesses.

"Our future opponents -- from states to drug lords -- are likely to be smart and adaptive. Recognizing our general military superiority, they will avoid engaging us on our terms, opting instead to pursue strategies designed to render our military power indecisive or irrelevant to their operations and objectives. They will make the effort to understand how we think, organize, command, and operate . . . will attempt to identify our strengths, weaknesses, and potential vulnerabilities . . . and will pursue a variety of generally lower-cost operational and technological initiatives."⁶⁸

A Reduced CSS Footprint

Army deployment and sustainment communities are challenged to: meet imposed deployment timelines; reduce combat zone CS / CSS footprint; and reduce the cost of logistics without reducing warfighting capability or readiness.⁶⁹ To meet this challenge the Army logistics

community introduced CSS Reach as a solution. The goal of CSS Reach as stated before is to reduce the CSS footprint. Reducing the footprint has the effect of reducing the repair parts stocks deemed necessary to sustain the force. This shift away from just-in-case stocks creates the obvious problem of delayed receipt of requested repair parts, or responsiveness. Fittingly, CSS Reach, as is other initiatives to include the Strategic Distribution Management Initiative (SDMI) and Velocity Management (VM) are being designed with this delay in mind. The DoD community refers to this delay in velocity as customer wait time (CWT).⁷⁰ In the IBCT, CWT is the one metric, which is arguably, all the more vulnerable due to the incentive to achieve a smaller CSS footprint.

VULNERABILITIES OF REACH

It is against this backdrop of potential asymmetric threats, and challenging operating environment, I see three central themes that will further define the nature of the risks and vulnerabilities to CSS Reach operations. These themes expand upon points raised earlier in this paper and reflect my thinking about the future product support environment and the vulnerabilities to it:

- Information systems.
- Multiple Supply Sources, including third-party logistics sources (3PLs).
- Transportation.

Therefore, the three most important components of CSS Reach and their objective to provide product support will form the basis for the analysis of risk and vulnerability. The vulnerabilities of CSS Reach are not undisclosed, as noted earlier, FM 4-93.7 acknowledges the risk and corresponding vulnerability of Reach operations.⁷¹ The manual also highlights factors deemed useful in framing the contributors to the vulnerabilities of reach. They are:

- Direct or indirect interference (disruption by attack or accident)
- Quality Assurance and Quality Control (QA/QC) (performance standards)
- Protection (need for security)
- Poor or lacking communications networks (assurance and compatibility)

Consideration of these factors, and the characteristics of logistics and contributors of risk mentioned above, when analyzing the critical components of CSS Reach will help in understanding the vulnerabilities and provide a basis for the recommendations about where we should further invest to mitigate their impact

Vulnerability of Information Systems

In the commercial sector, supply chain management activities are successful when a holistic, end-to-end approach is taken and the processes and information are integrated throughout.⁷² Without this acknowledged fundamental ingredient, it is understandable that the supply chain would cease to function effectively. The same can be said about the product support system of the IBCT. The Organizational and Operational (O&O) concept for the IBCT states: "the Brigade requires the most advanced C4ISR technologies available . . . ;" suggesting the importance of information and communications to its operations.⁷³ Indeed, the IBCT's distribution-based supply system does leverage information to move it away from the traditional dependence upon just-in-case to a system capable of delivering the right part, at the right time, to the right location. But there is risk involved.

The IBCT's dependence upon information and communication (C4ISR) systems produce self-inflicted vulnerabilities throughout the "integrated supply chain". The following passage exemplifies this assertion:

"The critical infrastructures of energy, telecommunications, transportation, banking and finance, and vital human services (government, emergency services, water, etc.) - including military warfighting capability-rely heavily on the security of their supporting computer operations. As the most advanced nation on earth, the United States is also the most vulnerable-the highest user of computers and automation, the greatest user of electricity. Recent efforts to economize in the commercial sector have often resulted in businesses so tightly reliant on "just-in-time" processes that any disruption could prove catastrophic."⁷⁴

Because of this over reliance, the IBCT supply chain becomes excessively vulnerable to disruptions caused by deliberate attacks from adversaries; or unintentional interruptions caused by random acts of nature.⁷⁵ September 11th 2001 proved that adversaries will go to great lengths to attack Americans, even on home soil. This propensity for our adversaries to attack us at home could have collateral impact on our military operations abroad. A direct attack by an adversary on a supply chain segment here in America could disrupt the movement and tracking of critical repair parts destined for the area of operation.

At risk is the IBCT's access to supply sources, visibility of assets, and velocity of product support.⁷⁶ The following passage very aptly describes the nature of the global network, its benefits and its drawbacks.

". . . the phenomenal benefits of this global interconnectivity carry with them imposing risks from parties who would abuse the open and unregulated nature of the technology, the very thing which makes it so successful. As the nuclear threat has diminished, new technologies have appeared that have virtually eliminated the status historically enjoyed by the United States as a sanctuary from foreign aggression. A computer anywhere in the world can now open valves, divert funds, alter switches, or send military orders instantaneously to

virtually any point on the globe, traversing undetected through international borders and legal jurisdictions."⁷⁷

The Defense Intelligence Agency lists some of the most prevalent information technology threats as follows:

- Information Warfare (IW). Actions taken to degrade or manipulate an adversary's information systems while actively defending one's own.⁷⁸
- Cybernetic Warfare (CYW). A distinct form of information warfare involving operations to disrupt, deny, corrupt, or destroy information resident in computers and computer networks.⁷⁹
- Transnational Infrastructure Warfare (TIW). Attacking a nation's or sub-national entity's key industries and utilities – to include telecommunications, banking and finance, transportation, water, government operations, emergency services, energy and power, and manufacturing.⁸⁰

Additionally, issues such as availability of access; ease of access; compatibility; ability to communicate with extended enterprise members; assurance; and system reliability and security will continue to exist and warrant investment to mitigate their risks.

Vulnerability of Using Multiple Supply Sources

To achieve its full potential, CSS Reach was designed to achieve connectivity in all directions to multiple or third-party logistics supply sources. This attribute is directly linked to DoD initiatives expanding the use of commercial sources to meet requirements. The intent of DoD is expressed in the following excerpt:

"We have revised DoD regulations to grant greater authority to field activities to make purchases from local commercial suppliers . . . rather than through the central supply system. This added authority is increasing the ability of our activities to use the source of supply offering them the best value and remove slow buying as a motivation for "just-in-case" inventory practices. It will also contribute to our initiative to reduce infrastructure by helping to limit the role of our central supply system to those cases where it really adds value."⁸¹

It can be ascertained from the above passage, that the integrated capability to interface with commercial sources of supply is there to facilitate the reduction of the CSS footprint. Users of this capability claim that by removing the middle man from the equation, improved efficiency and ultimately greater service can be achieved.⁸²

What may or may not be readily apparent to the reader is that adoption of this strategy is laden with risk. Removal of the middle man (DoD central supply system) brings with it a unique set of risks. First, the obvious risk is from the utilization of untested (war time)

commercial/industry supply sources. Industrial/commercial sector supply activities are potentially unprotected and thus are a vulnerable link in the supply in the supply chain.⁸³ Under the existing repair parts system, repair parts management is performed in house by DoD commodity managers surrounded by security inherent within DoD.⁸⁴ Secondly, commercial supply sources are also vulnerable to swings in performance.⁸⁵ QA/QC decline, poor reliability as a source, failure to deliver the right stuff at the right time or place, and inability to track assets are all potential conditions a commercial sector source is liable to default upon. This is possible because of the lack of military standards and rules governing the operations of the commercial sector vendors. In addition to failing to meet the standards of performance the Army requires, some commercial companies do not operate overseas or in hostile environments.⁸⁶ Consequentially, solid relationships developed during peacetime can be rendered useless in war or during an overseas deployment exacerbating existing supply vulnerabilities. To mitigate this problem, commercial sector supply sources will must become world class (global, reliable, and adaptive). Investment towards that end will be required.

Vulnerability of Transportation

CSS Reach seeks to exploit the global nature of the "extended enterprise". Because of its distribution based orientation and also of "product support"; transportation then, becomes the vital component in the total process.

'Transportation is more important than ever in the sense that firms' supply chains are becoming more and more global. Thus, it is all the more important to be able to move product from overseas points to domestic points and vice versa.'⁸⁷

The importance of transportation in the process and its critical interlinkages with suppliers, users, and information technology systems are the basis for this statement. Also, indirectly contributing to the increased vulnerability of transportation is the mandate to achieve a smaller CSS footprint. To achieve this mandate, increased leveraging of IT and 3PLs companies; as well as maximum use of throughput techniques to deliver supplies is an emerging strategy.⁸⁸ To that end, CSS Reach doctrine suggests increased use of strategic configured loads (SCLs). The concept calls for the configured loads to be assembled and prepared outside the area of operation (AO) - in CONUS or at an ISB, with the additional purpose of not creating a stockpile forward in the combat zone, eliminating the need for security. There are vulnerabilities associated with the above process.

First, with the changing nature of our adversaries and their methods of attack, the consolidation of configured loads anywhere without adequate protection will be unlikely. The

following description expresses the challenge future adversaries will present: "the new cargo criminals often are nationally networked and internationally backed; they are able to bribe insiders and maintain contacts that provide valuable information on the most profitable cargoes."⁸⁹ Secondly, configured loads become more of a lucrative target once they are prepared. Also, because CSS Reach uses scheduled supply times or "time definite delivery" (TDD), would-be adversaries with the ability to determine transport schedules, could plan attacks to disrupt them.⁹⁰ This probability is not beyond the realm of possibilities:

"Current and future adversaries are likely to choose asymmetric means, such as the October 2000 attack on the U.S.S. Cole, to register displeasure with the status of the United States as the world's dominant power. But instead of targeting an American warship in a foreign port, hostile states and international terrorist organizations may challenge American economic and cultural might closer to home. The openness of the information, energy, finance, and transportation systems that sustain American wealth and power also provides attractive targets."⁹¹

As we attempt to reduce the logistics footprint by incorporating multiple source suppliers, we must remember that third party transportation suppliers are susceptible to the same vulnerabilities as the military – maybe even more so. In some cases a 3PL company may not be able to operate outside of the Continental United States or in hostile environments. This circumstance has the effect of removing these vital supply sources from the list of competitive sources of supply, impacting upon CSS Reach's effectiveness and ultimately its reliability. Additionally, if the 3PL remains in support of the IBCT then protection for its transportation and product may be an unexpected burden and cause for disruption to IBCT operations.⁹²

Each component of CSS Reach can be the linchpin. Each component is interdependent and reliant upon the other; a vulnerability to one component can have a collateral effect on the others. It is in this context we must think of the implication of CSS Reach on the Objective Force.

IMPLICATIONS FOR THE OBJECTIVE FORCE

To put into context the implications CSS Reach operations will have on the objective force, we should first understand a little about the objective force; and then, whether CSS Reach is a component of its employment strategies? Finally, if the answer to that question is yes, it will help to also understand the sustainment concepts underlying the Objective Force development.

WHAT IS THE OBJECTIVE FORCE?

"The Objective Force . . . is an offensively oriented, versatile, multidimensional force capable of executing a variety of roles and missions. [It provides] . . . a broad set of operational options to National Command Authorities and joint force commanders from deterrence through the post-conflict phase of future operations. The general purpose and quality of this force ensures its long-term relevance to adaptive, sophisticated threats and the frequently changing requirements of the emerging operating environment. [It incorporates] . . . advanced C4ISR; the future combat system (FCSS) of systems; integrated sensors; robotics; attack/reconnaissance helicopters; and expanded capabilities for maneuver, stand-off precision fires and sustainment."⁹³

Readily visible in the above definition, are references to capabilities and strategies which are not part of the interim force (IBCT) concepts today. References to the future combat system, integrated sensors, robotics; and expanded capabilities for maneuver may warrant entirely new sustainment concepts.⁹⁴

Future Army Sustainment Theory

"Sustainability in a full spectrum Army requires a sustainability concept that allows the UA [Objective Force] to maintain combat power with dramatically reduced stockpiles in theater while relying on technology to provide reach back access to supplies, sustained velocity management and real-time tracking of supplies and equipment. Sustainability will be improved by a concept of pulsed, as opposed to continuous, logistics to meet reduced requirements. Units of Action will be self-sustaining for three days of high OPTEMPO operations without replenishment from external sources. Sustainment effectiveness and efficiency are provided by innovative, multi-modal distribution concepts; ultra-reliable and redundant components that remain operationally effective with minimal pulsed service; commonality in system, subsystem and component across formations in platforms and components; new forms of power generation and high fuel efficiency; and simplified systems maintainability that greatly reduce maintenance and replenishment requirements. Revolutionary means of transporting and sustaining people and material to leverage new ground and aerial concepts of delivery and dynamic re-routing and tracking of supply delivery as priorities dictate will match higher operating tempos with equally responsive sustainment tempos."⁹⁵

Reach Operations in the Objective Force

Exploration of what the objective force sustainment environment will look like is ongoing as is research to determine the logistics strategies will best serve in it. The following excerpt best describes this activity:

"Although the sustainment concept for the Unit of Action [Objective Force] requires significant additional exploration to define properly, current investigation suggests. . . . Time-proven logistical principles still apply. . . . Simultaneously, the new sustainment concepts that are emerging in support of the Interim Force and

the increasingly visible requirements of the extended, noncontiguous battlefield must be expanded further."⁹⁶

In light of the possible future Army sustainment practices described above, it is not clear if CSS Reach will play as prominent a role as it does in the interim force. What is clear from the future theory is that reach will have some role.

OBJECTIVE FORCE IMPLICATIONS

The implications of CSS Reach upon the Objective Force will involve its ability to achieve its promise under similar or in some cases, greater performance parameters. As we can gather from the future sustainment theory, the objective force will still operate with a reduced footprint forward; require real-time logistics information; conduct pulsed or scheduled resupply operations; and still maintain a basic load of three days. These new parameters will be maintained only through the exploitation of logistics enablers such as:

- innovative multi modal distribution systems;
- revolutionary transportation strategies and;
- ultra-reliable redundant components.⁹⁷

A close look at these enablers reveal that they represent the same components deemed vital to CSS Reach -- multiple source suppliers; transportation; and information technology respectively.

Using this linkage, CSS Reach, with its existing vulnerabilities, puts the objective force strategy execution at risk. The envisioned sustainment concepts cannot be executed without addressing the vulnerabilities of reach. Innovative multi-modal distribution systems will only serve to increase the opportunities for disruption due to an expanded community of suppliers and delivery systems. A revolutionary in transportation will not be effective because of the lack of security and the ever increasing threat of interdiction. And finally, the reliance upon ultra reliable systems may present an unforeseen challenge. The cost of such systems and the call for their redundancy may have the unintentional effect of limiting their availability and ultimately their usefulness. Logistics systems built around ultra-reliable components which are only funded and fielded at lesser levels can introduce unintended, corresponding 2nd and 3rd order effects and ultimately lower lofty expectations. The same vulnerabilities involving the results of potential information, cybernetic, and transnational infrastructure warfare attacks exist, as well as issues concerning physical access, compatibility, and system assurance.

RECOMMENDED AREAS OF INVESTMENT

In light of the vulnerabilities above, use of CSS Reach to support the Objective Force has significant implications. To mitigate these risks and vulnerabilities, investments are recommended in the following key areas:

MULTIPLE SOURCE SUPPLIERS

The intent is to improve supply source access and drive select suppliers to world class status by--

- building strategic supplier alliances(global in nature)⁹⁸
- establishing common information technology platforms⁹⁹
- improving understanding of third-party source selection¹⁰⁰
- developing cultural understandings and communications¹⁰¹
- exploring further use of Prime Vendor (PV), Virtual Prime Vendor (VPV), and the Maintenance, Repair, and Operations (MRO) Programs¹⁰²
- expanding internet ordering opportunities¹⁰³

TRANSPORTATION

The intent is to increase reliability and security by--

- raising awareness of vulnerabilities among DoD and the private sector¹⁰⁴
- integrating security measures globally and over all transportation networks¹⁰⁵
- improving tagging, tracking, communications, and access to near-real-time data¹⁰⁶
- investing in the Strategic Distribution Management Initiative (SDMI)¹⁰⁷
- better understanding the relationship between cyber security and physical transportation security¹⁰⁸

INFORMATION TECHNOLOGY (IT)

The intent is to strive towards assured information and security by--

- improving Information Operations and Information assurance¹⁰⁹
- continuing/increasing the use of Electronic Data Interchange¹¹⁰
- conducting counter information, cybernetic, and transnational infrastructure warfare¹¹¹
- developing high-tech computers with advanced connectivity capability¹¹²

WARFIGHTER CONFIDENCE

The intent is to maintain confidence and strive towards assured availability by--

- increasing asset visibility¹¹³
- balancing just-in-time and just-in-case inventory/right sizing the footprint¹¹⁴
- developing realistic logistics survivability wargaming¹¹⁵
- implementing Customer Wait Time (CWT) and Time Definite Delivery initiatives designed to add them to the performance metrics lexicon¹¹⁶

CONCLUSION

The Army's integration of commercial best practices into its logistics strategy of CSS Reach brings with it a unique set of risks and vulnerabilities. The very techniques, partnerships, and processes CSS Reach seeks to capitalize upon are harbingers of risk and threaten to expose it to vulnerabilities that could encumber the Interim Brigade Combat Team's full spectrum dominance. The greatest causes for concern are the vulnerabilities to the areas of: multiple source suppliers; transportation; and information technology. When the scope of the issue is narrowed to the examination of repair parts flow, the vulnerabilities place at risk combat system readiness and warfighter confidence in an unproven logistics system that forecasted its potential risks.

To become viable sources of supply, commercial sector suppliers must become world-class (global, reliable, and adaptive) companies with a keen sense of operational security. The transportation arm of CSS Reach is vulnerable to disruption or interdiction due to both deliberate and unintended events; as well as the collateral effects brought on by negative occurrences (denied access, outages, incorrect data, and losses of data and visibility) in the area of information technology. Over reliance on information technology can also be a recipe for disaster. Potential information, cybernetic and transnational infrastructure warfare attacks along with issues concerning physical access, compatibility, and assurance are areas of highest concern. The vulnerabilities discussed are not irreversible.

Investment in those critical areas identified will bring dependable solutions to some sectors and start the process of solution discovery in others. Investments in areas like assured information technology systems are costly; while some critics say assured systems may not be an attainable goal. For the objective force, the lowering of expectations and the corresponding adjustments in the overall system could be a step in the right direction. A step in the wrong direction would be to allow to stand, a system to built upon promises that could not be fulfilled, and then not adjust the corresponding output to reflect its new performance factors. That would put at risk soldiers and mission accomplishment.

The purpose of the paper was not to dismiss reach as a strategy. It was to highlight that what is good in one sector of logistics is not always good in the other especially when there is a bottom line at stake. For the Army, it's mission accomplishment and soldier's lives. CSS Reach poses some risks and vulnerabilities that can be mitigated through investment. Let's Roll!

WORD COUNT = 9947

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